

Applicant has noted that there are two different scenarios present when utilizing such devices. One scenario is where the ambient (surrounding) light is high. In that environment, the light from the display panel 18 must be at a high level to provide the contrast to allow for reading of the display. The second scenario is where the ambient light is low. In that environment, the light from the display panel 18 can be reduced because the contrast between the display panel 18 and the ambient light is high enough that the display panel 18 can be read with a significant reduction of the light produced thereby.

In one embodiment, a gate 25 can be placed in the light pipe coupler 24 which can be moved to various positions to selectively allow or prevent light from entering the backlight panel 26. The gate 25 can be operated either manually or automatically. It should be readily recognized that the gate 25 can be implemented in a variety of ways and those implementations would be within the spirit and scope of the present invention.

To illustrate clearly how the system 20 shown in FIG. 2 is utilized on a single keypad 12, refer now to FIG. 3 which shows a keypad which includes a hollow, transparent or translucent portion 122 for receiving the light from backlight panel 26. The light is then reflected as is seen off reflective member 124 up through the hollow, transparent or translucent portion 122 of the keypad 12. The keypad in turn has a translucent or transparent portion 126 to which the light can be observed. Accordingly, the light from the display panel 18 is used advantageously to provide luminescence to one or more keypads 12. Heretofore most all previously known systems for providing luminescence to a plurality of keypads have utilized an electronic light source for providing the lighting to a keypad. The present invention uses lighting of the display panel 18 to provide the illumination to one or more keypads 12.

One of ordinary skill in the art readily recognizes that the illuminated keyboard system 20 shown in FIGS. 2 and 3 is but one embodiment of a system which could advantageously utilize the light source of the display panel 18 for illuminating the keypad.

To more particularly show another embodiment, refer now to FIG. 4, which is a partially cut away view of a computer 10'. In this embodiment rather than piping the light to the backside of one or more keypads 12, the illuminated keyboard system 20' reflects a portion of the light from the display panel 18' to the top portion of one or more keypads 12 through the use of reflecting member 202 in combination with a light coupler 204. Through the combination of the light coupler 204 and the reflecting member 202 the top portion of one or more keypads 12' are illuminated. This system provides light to the keyboard 14 with minimal modification to the device.

An even simpler variation of the above is shown in the embodiment of FIG. 5. In FIG. 5, the display panel 18" contains a light source 182 conveniently located so that light from the light source 182 falls on one or more keypads 12" after passing through a window 208 in covering 206, and a window in display panel 18". These windows could each be openings, or could be translucent or transparent covers. In some situations, the display panel 18" may itself form the outer casing, in which case covering 206 may not be present. In any event, an optional gate 202' can be used to automatically or manually adjust or totally block the amount of light falling on one or more keypads. It should be readily recognized that the optional gate 202' can be implemented in a variety of ways and those implementations would be within

the spirit and scope of the present invention, including sliding doors as shown in cross-section in FIG. 5, or pivoting doors similar to member 202 in FIG. 4.

Referring now to FIG. 6, another variation of the invention is shown in which a camcorder 601 includes a swing-out display assembly 651. The display assembly 651 includes a covering 606 and a display 618. As is customary with existing camcorders, the display 618 can show live or recorded video. On the side of the camcorder are a number of keypads 612 which could be for functions such as rewind, fast forward, play, record, exposure control, titling and the like.

A light source 683 provides illumination for the display 618. Light from light source 683 also passes through window 608 to illuminate keys 612. This window could be an opening, or could be a translucent or transparent cover. In some camcorders, which would also be embodiments of the invention, the display panel 618 may from the outer casing of display assembly 651, in which case covering 606 may not be present.

An optional gate 602 can be used to manually or automatically adjust or totally block the amount of light falling on one or more keypads 612. It should be readily recognized that the optional gate 602 can be implemented in a variety of ways and those implementations would be within the spirit and scope of the present invention.

Accordingly, as is seen, a simple and inexpensive system for providing lighting to a keyboard is provided by actually utilizing the light generated by a device associated with the keyboard. In so doing, a device can be used in a variety of environments in which the surrounding environment is not well lit without adding undue cost and expense to the device system. In addition since the illuminated keyboard system utilizes the existing light source on the device associated with the keypad, the illuminated keyboard system does not affect the power consumption of the device.

Although the present invention has been described in accordance with the embodiments shown, one of ordinary skill in the art will recognize that there could be variations to the embodiment and those variations would be within the spirit and scope of the present invention. Accordingly, many modifications may be made by one of ordinary skill without departing from the spirit and scope of the present invention, the scope of which is defined solely by the following claims.

I claim:

1. In a device which includes at least one key pad and a panel for displaying information responsive to the pressing of at least one keypad, an illuminated keypad system comprising

a light source within the panel for illuminating the panel, a window for allowing a portion of the light from the light source to illuminate at least one keypad.

2. The illuminated keypad system of claim 1 which includes a gate means for adjusting the illumination of at least one keypad.

3. In a device which includes at least one key pad and a panel for displaying information responsive to the pressing of at least one keypad, an illuminated keypad system comprising

a light source within the panel for illuminating the panel, a conductor element coupled to the light source to conduct light from the light source so as to illuminate at least one keypad.

4. The illuminated keypad system of claim 3 in which the conductor element comprises a backlight plane.

5. The illuminated keypad system of claim 3 which includes a gate means for adjusting the illumination of at least one keypad.